

REMARKS

Claims 14-22 currently appear in this application. The Office Action of August 22, 208, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicant respectfully requests favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

Claim Objections

Claim 15 is objected to because of the recitation of "atmospheric temperature". And the last phrase "the ethylene glycol and the alcoholic reaction media are separated and recovered" is said to be redundant.

Claim 15 has now been amended to recite atmospheric pressure, and to delete the redundant phrase.

Claim 18 is objected to because the first recitation of "alkaline" should be -alkali--.

The present amendment makes this correction.

Claim 20 is objected to because the language in the fourth line is said to be unclear.

Claim 20 has been amended to read, "sulfuric acid concentrate or hydrochloric acid ~~are~~ is employed until an acid pH is achieved ~~of-in~~ in the media..."

Art Rejections

Claims 15, 17 and 20-22 are rejected under 35 U.S.C. 102(a) as being anticipated by Yazaki et al., US 6,580,005.

This rejection is respectfully traversed. Yazaki subjects PET to saponification in the presence of ethylene glycol. In contrast thereto, the presently claimed process saponifies the PET in water immiscible alcoholic reaction media. Ethylene glycol is miscible with water, so it is clear that Yazaki cannot possibly anticipate the herein claimed process.

The herein claimed process forms two phases at the end of the saponification step, namely, an

organic and an aqueous phase. By using a water-immiscible alcohol, the ethylene glycol remains with the alcohol. The addition of a sufficient amount of water makes it possible to dissolve the terephthalic acid salt in such a way that two phases are formed, making it possible to separate the terephthalic acid salt from the ethylene glycol without the need for filtering.

As noted above, the separation of the terephthalic acid salt from the ethylene glycol represents the principal difference of the claimed invention from the process disclosed in Yazaki, inasmuch as the separation stage replaces the Yazaki precipitation of the terephthalic acid salt or its filtration after saponification. This is recited in claim 15, and is clearly demonstrated in examples 1, 4, 5 and 7 of the present application.

Furthermore, the herein claimed process has an additional advantage in that the use of an alcohol forms a single phase with ethylene glycol, since ethylene glycol is one of the reaction products of

the saponification step. In the Yazaki process, the medium is ethylene glycol that scrolls the chemical equilibrium to reactives that inhibit the reaction, which explains why Yazaki's process requires higher temperatures, *i.e.* more than 100°C, whereas the herein claimed process occurs at about 90°C. The Yazaki process requires higher temperature to break the PET chains in the presence of terephthalic acid salt + ethylene glycol.

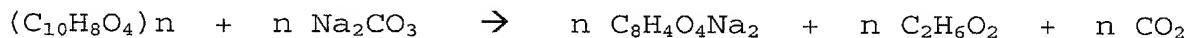
Ethylene glycol is used along with a water-immiscible alcohol and water in order to dissolve the terephthalic acid salt obtained from the saponification reaction prior to filtration thereof. This is not disclosed in Yazaki. Since Yazaki requires a solid-liquid separation as necessary in the process disclosed therein, it is clear that the presently claimed process is not anticipated by Yazaki, as no solid-liquid separation is required.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yazaki.

This rejection is respectfully traversed.

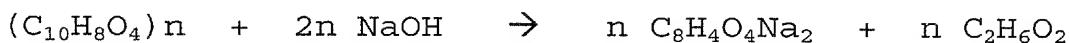
There is no suggestion in Yazaki of how to eliminate the solid-liquid separation step, nor how to maximize the terephthalic acid recovery. The method claimed herein uses a two-phase system for separating the terephthalic acid salt.

Furthermore, it is respectfully submitted that it is not obvious to use sodium carbonate rather than sodium hydroxide, inasmuch as the stoichiometry reaction indicates that two protons (not contained in sodium carbonate) are required for forming the sodium terephthalate and ethylene glycol. Yazaki's process is represented by the following equation:



It can be seen from the above equation that the number of hydrogen atoms, 10, on right side of the equation is greater than on the left side (8), which is not possible. The two extra hydrogen atoms on the right side cannot be provided by the added sodium hydroxide amount; therefore, we assume that

they must be provided from other compounds that are not described in the patent. The reaction of PET with sodium hydroxide is shown in the following equation:



Claism 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatnetel over Tyazaki in view of Pitat et al., GB 822,834 and Mays, US 3,801,237.

This rejection is respectfully traversed.
Neither Pitat nor Mays suggets the use of an immiscible alcoholic reaction medium to avhieve two liquid pahses, helping the hemical equilibrium, eliminating the necessity of a solid-liquid separation.

Although the Examiner remarks that Mays discloses the use of immiscible alcohols, this process does not lead to depolymerization of the fibers and does not dscribe or suggest the use of an alcohol as al alternative to eliminate the solid-

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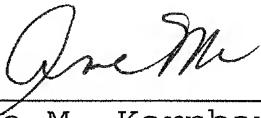
liquid terephthalic salt separation stage. Mays adds nothing to Yazaki.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,

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